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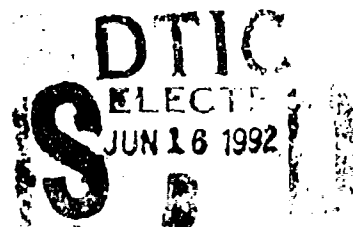
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CONTAINER MANAGEMENT WITHIN THE TOTAL DISTRIBUTION SYSTEM  
THE DESERT STORM MODEL

BY

Colonel James S. Ebertowski  
United States Army



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the connectivity and integration required to obtain and maintain visibility and accountability of materiel and unit equipment flowing in a container dominated distribution system. The doctrinal and planning changes required to totally integrate the intermodal container into our operational plans must be pursued in a timely, effective, and efficient manner. The coming drawdown of U.S. forces, the shift to fewer forward deployed forces and fiscal constraints highlights the need to be able to rapidly deploy and sustain our warfighting forces anywhere in the world. The intermodal container coupled with the RO/RO ship offers the strategic mobility and the logistical efficiencies to meet the time and cargo volume requirements to accomplish this. The intermodal container is here to stay; the military must be able to exploit rather than react to the potential of the container.

USAWC MILITARY STUDIES PROGRAM PAPER

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CONTAINER MANAGEMENT  
WITHIN  
THE TOTAL DISTRIBUTION SYSTEM  
THE DESERT STORM MODEL

AN INDIVIDUAL STUDY PROJECT

by

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U.S. Army War College  
Carlisle Barracks, Pennsylvania 17013  
27 April 1992

## ABSTRACT

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Operations Desert Shield and Storm (ODS) required the rapid movement of equipment, materiel and personnel to project U.S. combat power to the Gulf. When viewed in its entirety, the operations can only be seen as a huge logistical success. ODS was the first large military operation to rely heavily on the intermodal container, with over 37,000 containers being delivered to the theater. By analyzing the container-oriented distribution system that evolved during ODS, Logisticians have the opportunity to fine-tune the management of containers within the system. Maintaining intransit visibility and asset accountability has always been a challenge for the Logistician. One of the major ODS lessons learned, was the theaters need for centralized management of the distribution system at each level of command within the theater. Combining the theaters' materiel and transportation management functions into distribution centers at each level of command, would provide the connectivity and integration required to obtain and maintain visibility and accountability of materiel and unit equipment flowing in a container dominated distribution system. The doctrinal and planning changes required to totally integrate the intermodal container into our operational plans must be pursued in a timely, effective and efficient manner. The coming drawdown of U.S. Forces, the shift to fewer forward deployed forces and fiscal constraints highlights the need to be able to rapidly deploy and sustain our warfighting forces anywhere in the world. The intermodal container coupled with the RO/RO ship offers the strategic mobility and the logistical efficiencies to meet the time and cargo volume requirements to accomplish this. The intermodal container is here to stay, the military must be able to exploit rather than react to the potential of the container.

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CONTAINER MANAGEMENT  
WITHIN  
THE TOTAL DISTRIBUTION SYSTEM

THE DESERT STORM MODEL

CHAPTER I

INTRODUCTION

The more I see of war, the more I realize how it all depends on administration and transportation....It takes little skill or imagination to see where you would like your army to be and when; it takes much knowledge and hard work to know where you can place your forces and whether you can maintain them there. A real knowledge of supply and movement factors must be the basis of every leader's plan; only then can he know how and when to take risks, and battles are won only by taking risks.<sup>1</sup>

General Sir Archibald Wavell

Down through history, warfare and the means of waging war have become ever more complex. Our ancestors walked to war with their rifles on their backs and upon arrival lived off the land. By our standards, they didn't have to go very far as their opponents were usually neighbors with a different opinion.

The world is no longer the large place it once was. The Armed Forces of the United States must now be prepared to go further and faster than anytime in our history, but they must also take along the thousands of items needed to sustain the American fighting man. The distribution system that supports the forces must move thousands of tons of materiel from the factory to the foxhole. A steady, timely flow of supplies must transit a series of storage locations and transportation facilities, without interruption, to meet the requirements of

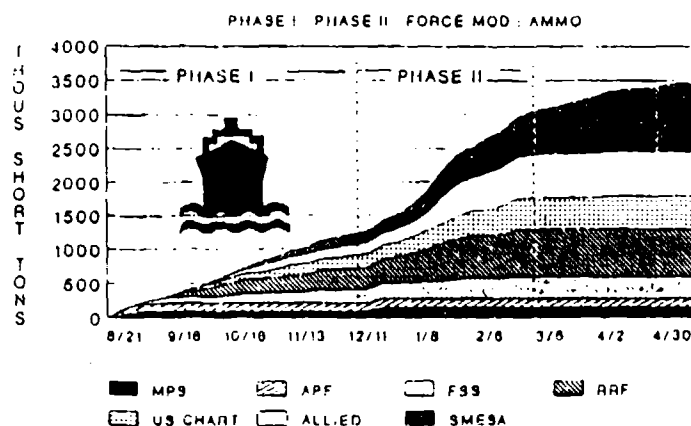


the man with the gun facing the enemy.<sup>2</sup>

The U.S. Armed Forces conducted an unprecedented and extraordinary logistical effort in deploying, sustaining and redeploying its forces during Operations Desert Shield and Storm (ODS). Desert Shield was a watershed event for the military distribution system and intermodal transportation (ocean/rail/truck), as it was the first large scale military operation to capitalize on the benefits that the intermodal container routinely provides to commercial customers. The commercial shipping industry carries 90 percent of the world's trade and the majority of it is done by container.

In response to the Kuwait invasion, a team of military and carrier representatives developed the Special Mid East Shipping Agreement (SMESA), an agreement that incorporated into one document all requirements necessary to meet the changing logistical situations and simplify procedures in the theater. As shown below, by 30 April 1992, SMESA shipping was carrying an increasing portion of dry cargo to the Gulf.

## DESERT STORM SEALIFT DRY CARGO DELIVERY PROFILE



The strategic edge that the U.S. enjoyed in the Gulf was gained by making the best use of all available transportation assets. The intermodal container was a key factor in integrating and maximizing the use of it. Containers delivered 28.8 percent of the sustainment cargo and unit supplies moved to the Gulf and the operational and logistical flexibilities provided by the container proved to be critical to the success of the distribution system.<sup>3</sup>

## CHAPTER II

### INTERMODAL OVERVIEW

Within the transportation industry, the advent of the intermodal container and the development of through transport, the handling of goods only at the loading point and the ultimate destination, have revolutionized cargo handling. Intermodalism has increased transportation efficiency by having a single carrier manage the documentation and movement of cargo as it moves among the different modes, such as trucks, rail or ocean vessels. This, coupled with continued trends in the commercial maritime fleet to ever larger container vessels, will force the military to depend on these vessels to move an ever growing proportion of the equipment and supplies required to deploy and sustain our forces.

DOD has not kept pace with commercial industry in the change to a containerized transportation system. DOD has continued to rely upon breakbulk shipments and militarily useful roll on/roll off ships as has been demonstrated year after year during deployment exercises like REFORGER and TEAM SPIRIT. For example, the introduction of only a few 20 foot containers into the TEAM SPIRIT 90 deployment flow by deploying units resulted in severe handling problems in the corps storage areas.

In areas where containerization has been implemented, household goods, Army and Air Force Exchange System, commissary and some sustainment supplies, the benefits have

been lower costs, decreased shipping time and greater cargo security. Despite military planning actions and numerous container initiatives over a 20 year period, the military has never taken full advantage of the cargo handling service, information management systems and distribution benefits of container intermodalism. The focus has been on using the ocean transport element of containerization. The place where DOD has the least alternative, it has reacted, not planned.

As early as 1971, the Joint Logistics Review Board, headed by General Frank Besson examined logistics during the Vietnam era, recommended and had approved a DOD Project Manager to develop a container oriented distribution system. However after 1975, the Project Manager was done away with and the more decentralized "lead service" approach was used. Within DOD, there have been various attempts to integrate containers into the distribution system. However, the services do not have comprehensive written container distribution plans and the force structure needed to accommodate container delivered cargo is far from adequate.<sup>4</sup>

The experiences of ODS, when over four million tons of surge and sustainment cargo were moved to the Gulf proved to the U.S. military, that containers are critical to moving cargo not only in peacetime, but in time of war. The 37,000 sustainment containers delivered between August 1990 and March 1991, proved again that intermodal transportation could quickly move large quantities of cargo. What was also demonstrated was that the in-theater link of the distribution

system which is responsible to control and move supplies from the Seaport of Debarkation (SPOD) to the foxhole was not equipped nor manned to manage the volume of sustainment containers delivered to the theater.<sup>5</sup>

The growing use of containers has compounded cargo handling and visibility problems and has introduced requirements for special handling and information management that DOD cannot continue to solve by reactive planning.

#### SCOPE AND PURPOSE

During ODS, it became apparent that operating a distribution system on the scale required in the theater of operations demanded centralized planning and control of all segments of the system. While a particular portion of the system may have worked well, the collective system was not integrated or coordinated. For example, for the Logistician to ensure that no unit ever reported a failure due to inadequate resources, the theaters distribution system required constant time consuming, extraordinary management and manual intervention.

The container management and handling problems encountered during ODS clearly indicates the need to develop a DOD Total Distribution System that enables logisticians to control the flow of supplies from the producer to the foxhole, provides timely useful managerial information and has the force structure to accomplish the container handling mission.

Using the Desert Storm model, the purpose of this paper

is to focus on what many consider to be a major Desert Storm shortfall, the in-theater container distribution system and its lack of cargo visibility. Its goals are to examine container operations within the theater, discuss operator level fixes that worked and to make recommendations that will affect near-term operations and lead to long term systemic improvements. A distribution system that will provide the theater optimal delivery of materials and yet maintain the required visibility of supplies in a container dominated distribution system.

The operational practices, doctrinal procedures and force structure that make up the distribution system within which we operate must be examined and revised to enable DOD to exploit rather than react to intermodal containerization.

## CHAPTER III

### DISTRIBUTION SYSTEM DOCTRINE

During ODS, the doctrinal relationship between the Theater Army Movement Control Agency (TAMCA) and the Theater Army Materiel Management Center (TAMMC) was never fully operational. As a result, the two agencies were never able to achieve the unity of effort required to provide the theater an effective responsive distribution system integrating management of supply and transportation, developing effective information interfaces, providing intransit visibility, prioritizing the movement of critical items or performing any near term planning. The distribution system to be effective requires that shared information flow between the two agencies and this was not done routinely as reliable communications were never established and the two agencies were not colocated.

Current doctrine has the management of materiel (supply and maintenance) separate from the management of transportation at all levels the Theater Army (TA), the Theater Army Area Command (TAACOM), the Corps and the Division. Though MMCs and MCAs are assigned to the organizations above, their interaction is limited in the planning and execution phases and as a result, the effectiveness of the distribution system is limited.<sup>6</sup>

Joint Chief of Staff Publication 1-02, DOD Dictionary of Military and Associated Terms, 1989, defines the distribution system as follows: "that complex of facilities,

installations, methods and procedures designed to receive, store, maintain, distribute and control the flow of military materiel between the point of receipt into the military system and the point of issue to using activities and units."

A distribution system has both physical aspects (depots, force structure, transportation assets) and administrative aspects (documentation, information management, doctrinal design) and both must work in concert for the system to be functionally efficient. Control of the system is optimized by centralized management and decentralized operations.

#### THEATER LOGISTICAL COMMAND AND CONTROL

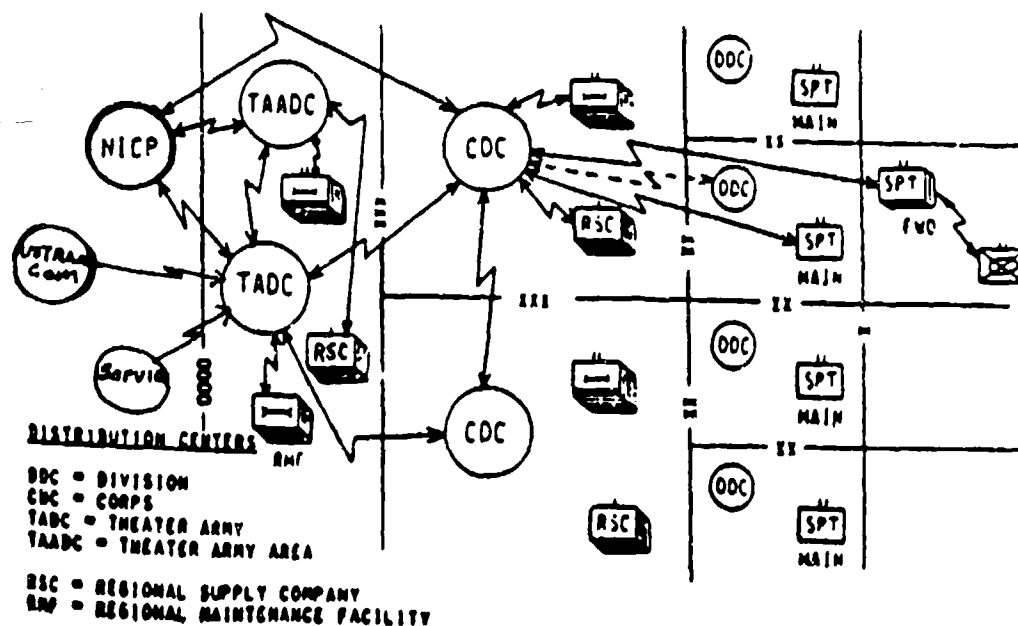
A Theater Army Distribution Center (TADC) must be established at TA to centrally manage and control the theater intra and inter-service distribution process. A responsive and effective theater distribution system requires that control of the system reside with a single authority, the Theater Physical Distribution Manager, who would command the TADC. The TAMCA and the TAMMC would be placed under the TADC to integrate the separate functions of materiel and transportation and to focus the distribution system on providing service to the customer. This reorganization would be mirrored at the TAACOM, the Corps and the division with the ultimate goal of providing a more responsive and efficient system to support the force.

Doctrinally, the TAMCA in coordination with the TAMMC establishes distribution patterns that effectively utilizes



the theater and corps support activities and transportation assets. The formation of a TADC would increase customer confidence by demonstrating improved supply and transportation responsiveness.<sup>8</sup>

#### PROPOSED DISTRIBUTION CONTROL STRUCTURE



Operation Desert Storm has shown that the concept of centralized management and decentralized execution is still valid. However, it has also shown that managerial agencies operating without central authority to provide unity of effort and focus, without current and accurate data and failing to coordinate and pass information internally created confusion and mistrust in the distribution system.

#### CONTAINER DISTRIBUTION FLOW

Containers must be moved as far forward in the theater as possible to take advantage of the cargo handling and

transportation efficiencies they provide. Current distribution doctrine only flows containers to the Theater Storage Area (TSA) and the Corps Storage Area (CSA) where contents are unstuffed, sorted, repackaged and moved to the using unit. In order to take advantage of the intermodal containers benefits, reception capability must reside in the division's main and forward support battalions especially as distances between the CSA, the support battalions and the using units continue to grow.

The increasing requirements to receive and process containers anywhere in the theater requires that container handling equipment (CHE) and materiel handling equipment (MHE) be added into the TOEs of those units operating the nodes along the theaters distribution system.<sup>9</sup>

#### CONTAINERS FOR UNIT IMPEDIMENTA

As was evidenced by ODS, almost all units deployed with some 20 foot containers which contained unit equipment and supplies and almost all units experienced difficulty in handling containers in the forward assembly areas. LTG Joseph Laposata, USAREUR DCSLOG during VII Corps deployment stated "that 4,089 containers were used to move USAREUR's unit equipment and supplies to the Persian Gulf."<sup>10</sup>

The necessity to use containers to deploy and sustain units dictates that the number of containers needed to deploy a type unit be included in its TOE. The ASL, PLL and other supplies accompanying a deploying unit should be converted to 20 foot container equivalents and used as

mobility and distribution planning factors. This would also serve as a constraint to keep down the amount of unnecessary baggage being brought along. TOE unit containers must have built in shelving, bins or an insert system that allows the unit access to the contents without having to keep taking every thing out until you find what is needed.

#### OCEAN TERMINAL OPERATIONS

If we in fact "train the way we intend to fight" as stated in FM 25-100, Training the Force, then Military Traffic Management Command (MTMC) must become the worldwide operator of common user ports during both peacetime and contingencies. MTMC, a United States Transportation Command (USTRANSCOM) component presently operates all DOD common user military ocean terminals worldwide. MTMC's peacetime, transition-to-war and wartime operational roles are identical and its policies, procedures and information management systems really drive what happens operationally in any port around the world. MTMC operates the ports during major deployment exercises such as REFORGER and TEAM SPIRIT, almost always with 7th Transportation Group units attached. 11

The 7th Transportation Group, a Forces Command unit, had the ODS contingency mission to operate the ports and deployed from CONUS in early August to the theater common user port of Dammam and the shared facility at Jubayl. Their 24th Transportation Battalion managed container operations at Dammam and performed in an outstanding manner. However, the Battalion had limited container management expertise and

insufficient TOE strength to manage the volume of containers that were moving into the theater. This when coupled with the documentation problems and the lack of coordinated management of the distribution system by the TAMCA and the TAMMC severely strained their ability to discharge, stage and manage containers for onward movement in the port.<sup>12</sup>

Peacetime working relationships should mirror wartime task organizations and to accomplish this would require that active and reserve terminal service organizations such as 7th Trans Gp become MTMC units much like aerial port squadrons are Military Airlift Command (MAC) assets. As transportation units are among the first needed and the first required to deploy, MTMC propensity would ensure that active and reserve component units have the tactical and technical proficiency required to accomplish the mission.<sup>13</sup>

#### PACKAGING INITIATIVES

The most efficient method of moving sustainment into an overseas theater is by container. DOD must continue to refine its procurement, consolidation and unitization procedures to ensure a useable accessible product is delivered to the customer. The container has provided the CONUS shipper the means to unitize cargo, move the cargo volume required and still meet delivery timelines to the overseas theater.

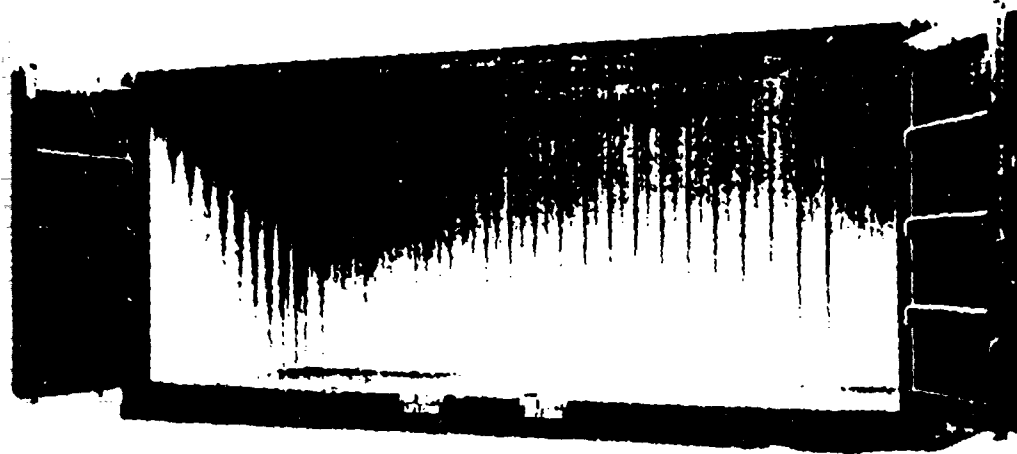
Shipping activities must unitize cargo, stuff containers and document the contents at the container consolidation point (CCP) in packages and quantities that maximizes

throughput with a minimum of breakdown and segregation required in theater. A classic ODS example is, which container is the repair part I need in and then in which of the 40 or more triwall boxes in the container is it in? To find the needed part at a forward field site required that triwalls be unstuffed, set on the sand and sorted through until the right piece was found.<sup>14</sup>

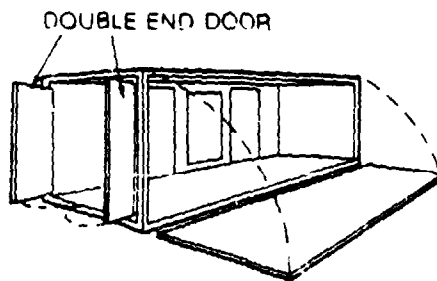
To support a class of supply that requires constant visibility and quick and easy access, a dedicated Class IX container must be purchased and used in the same manner that the Containerized Ammunition Distribution System (CADS) containers presently are. 20 foot International Standards Organization (ISO) side-opening containers or the 20 FOOT Mobile Facility (MF) program container should be purchased with accessible shelves or bins built into the container. Both containers shown on the following page are in the DOD inventory having been purchased by the Air Force and the Marines. They would be excellent candidates for a binned special purpose Class IX container.

The origin shipper would segregate the Class IX in the bins by Department of Defense Activity Address Code (DODAAC) or Supply Support Activity (SSA). The container would then be delivered directly to the user, parts would be unstuffed or consolidated and the container returned to the system. The container could also be used as an all weather mobile warehouse to store and issue parts where a fixed facility is not available.

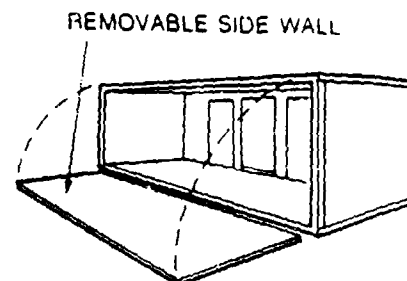
## 20 Foot ISO SIDE-OPENING CONTAINER



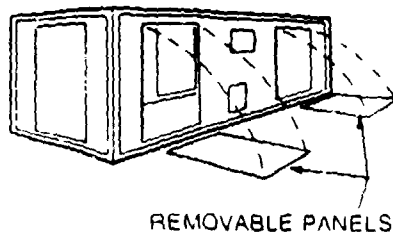
### MOBILE FACILITY (MF) PROGRAM



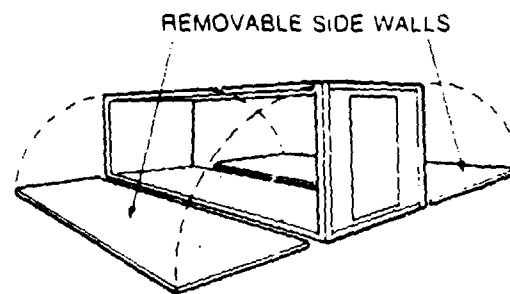
DOUBLE END DOOR  
SIDE OPENING MF TYPE B  
(MODIFIED)



REMOVABLE SIDE WALL  
SIDE OPENING MF TYPE B



REMOVABLE PANELS  
INTEGRATION UNIT



REMOVABLE SIDE WALLS  
SIDE OPENING MF TYPE C

As the Logistic Support Volume of the Vietnam Studies series states: "The practicality of operating directly out of containers prebinned in the United States is feasible and was demonstrated at Cam Ranh Bay....Because cargo is moved in a container from the continental U.S. to the depot or

directly to the forward unit, problems in sorting and identifying cargo are minimized."

Experience has already shown that large intermodal containers properly configured, documented and utilized can greatly enhance the transport, storage and handling of supplies within the distribution system.<sup>15</sup>

## CHAPTER IV

### CONTAINER PLANNING FACTORS

A critical task of the logistical force planner is to determine the Combat Service Support (CSS) force structure required to support the combat arms in their warfighting mission. The number and types of CSS units that will be maintained in the three components is directly related to the logistical planning and capability factors in the Army Force Planning Data and Assumptions (AFPDA).

The AFPDA is the one authoritative reference used by the Army Staff, Concepts Analysis Agency (CAA), major commands and other agencies in developing the Army's force structure. One of CAA's missions is to conduct studies and analysis in support of the Army Planning, Programming, Budgeting and Execution System (PPBES) and to model accurately and present valid data, CAA requires that parameters, capacities and force consumption factors be provided. The AFPDA which is updated and published annually is the key document in keeping logistical planning factors current. The AFPDA provides theater level analysis to support CAA in its planning and programing analysis, current force structure assessment requirements and strategic mobility reviews.

Military planners have long been skeptical of the applicability of containers to support and sustain large scale operations. As a result, container planning factors published in the AFPDA are not detailed enough for CAA'S Total Army Analysis (TAA) process to accurately model the



force structure needed to receive, transport and unstuff containers. Since the AFPDA provides theater level analysis and is the base document that drives the TAA models, it is imperative that it have the best logistical planning data available to determine what future CSS force structure should look like.<sup>16</sup>

#### STRATEGIC MOBILITY

Sealift transportation tonnage requirements for each theater should be broken down into what percentage of a class of supply would be containerized to include what the number of 20 foot and 40 foot containers would be. This data would ensure planning for container capable seaports and that CSS units with required container handling equipment are programed to operate at the appropriate distribution nodes through the entire system.<sup>17</sup>

The Study of Army Logistics 1981, Section 18, Transportation, addressed the status of containerization in the logistics system. It noted that support of each theater in terms of expected containerization must be specific to ensure force structure and handling capabilities can be adjusted. The study published the following supply class percent containerizable data:<sup>18</sup>

<u>SUPPLY GROUPING</u>	<u>PERCENTAGE</u>
General (consumables)	100
Non-regulated II & III pack	100
Conventional Class V	100
Class IV	75
Class IX (non-ALOC)	80

Containerized transport of equipment and materiel must be considered one of the critical requirements of strategic mobility. The advent of containerization has introduced very specific requirements for special handling capabilities that cannot be overcome by a units' "can do" attitude. In order to promote consistency between mobility planning and force structuring activities, planning for containerization must be included in the base document, which in this case is the AFPDA.19

#### TRANSPORTATION MODE UTILIZATION TABLES

Containerized and breakbulk cargo moving via the different transportation modes put different handling requirements on CSS units operating the distribution system. The transportation mode percentage to accurately predict workload at a distribution node must reflect a total percentage and also the percentage of a commodity moving containerized or breakbulk.

If a force structure programmer does not plan for a distribution node to receive a percentage of its sustainment via container and the capabilities of the unit programed to operate the node are not adequate, the accuracy of the model to project a CSS force is skewed and sustainment to the combat forces by a particular road or rail net would in actuality be constrained.

This AFPDA table reflects the flow of subsistence, individual equipment, package POL, construction materiel, ammunition, personal demand items, major end items, repair

parts and water from the port to the divisional area and show what mode of transport is moving what percentage of the materiel. Using subsistence as an example, a container line and a breakbulk line should be added under the main heading to show what percentage is moving via what mode.

The following table appears in the AFPDA, the bold letters are authors additions as to the type of information that should assist the logistical force planner in programming its with the right capabilities against the handling requirements.

(U) Transportation Mode Utilization for Materiel Distribution in Theater (SWA/Iran) (Percent of Movement) (data valid-Mar 85)

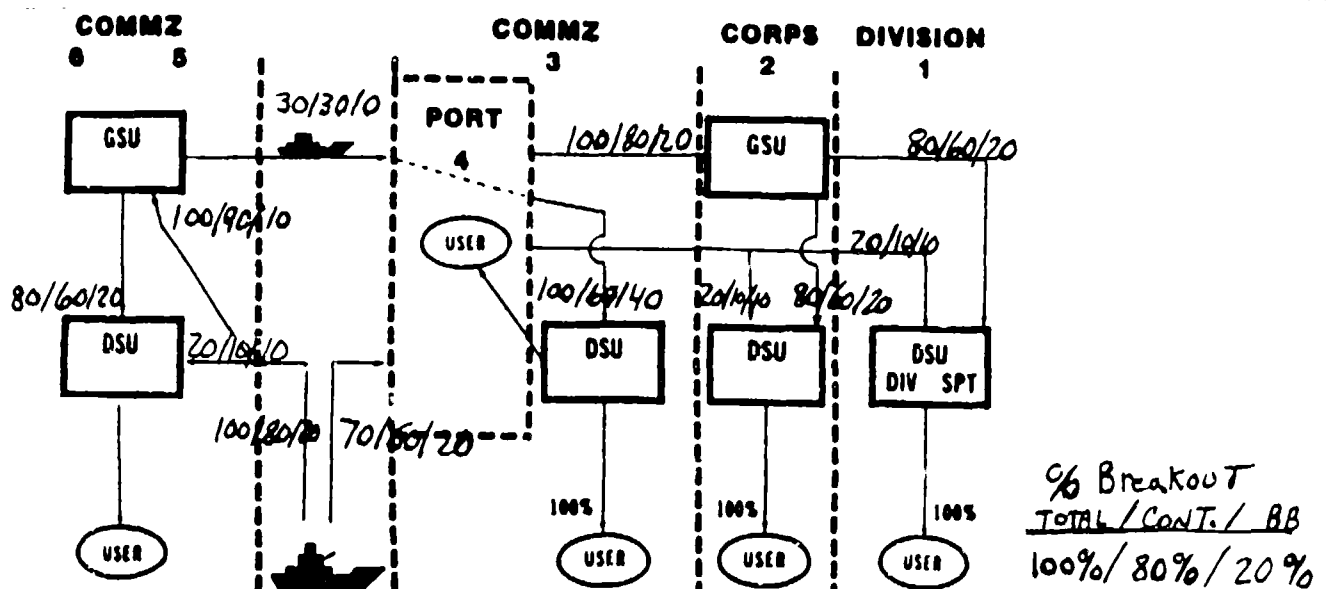
Mode of Transportation	Destination, Logical Region					
	1 Div	2 Corps	3 COMMZ	4 Port	5 Port offsh	6 COMMZ Offsh
Subsistence by rail	0	5	5	0	0	0
Container		5	5			
Breakbulk						
Subsistence by highway	95	90	90	0	0	100
Container	15	55	75			85
Breakbulk	80	35	15			25
Subsistence by AF air	5	5	5	0	0	

#### DISTRIBUTION FLOW CHARTS

The CSS force planner must know the distribution pattern for a supply class to workload the units in the system. The percentage of materiel flowing between the different distribution nodes containerized or breakbulk is a critical element that is missing. The chart below reflects the percent of fill a node receives from the others to get 100 percent of its requirement. The container handling

requirements generated would task the CSS units operating the nodes differently and would provide the true reception and shipment capability of each node. If the unit operating the node has no container handling capability, the TAA modeling process would consider this and either add force structure or appropriately constrain the nodes operational capability.<sup>20</sup>

#### SWA THEATER GENERAL SUPPLY FLOW



#### IOE MISSION CAPABILITY

The Intermodal container is here to stay! As the commercial maritime fleet continues to go to vessels that can carry 4,000 plus containers, have them discharged in 24 to 48 hours and ready for delivery, CSS units operating at distribution nodes along the system must be ready with the right materiel handling equipment.

A serious need exists for the force structure planner to relook the allocation of MHE within CSS units to ensure that adequate capability exists to position and unstuff 20 and 40

foot containers. The CSS units that were deployed to ODS just did not have the equipment needed to realistically get the container handling job done.<sup>21</sup>

In 1983, the Army developed a force structure called "The Army of Excellence" which resulted in a very lean CSS force structure. The Logistics Unit Productivity System (LUPS) program supported this restructuring and 29,000 CSS personnel spaces were traded off for 762 million dollars of equipment which was to enable the CSS units to increase their productivity with less people. The problem is that in most cases the new equipment was not bought and the personnel spaces taken out were not replaced.

In reviewing the LUPS program, GAO found that, as of February 1990, about half of the 390 logistics units in the LUPS program were considerably short equipment and manpower. In February 1990, the Army reviewed the personnel and equipment status of the LUPS units and found that 138 of the 390 units reviewed were too short equipment and or personnel to achieve the minimum "C-3" readiness rating.

This lack of CHE/MHE in CSS units resulted in the capabilities of the distribution system being degraded. All classes of supply moving through the system require CHE/MHE at the various nodes to position, unstuff and load for distribution. To ensure a responsive efficient distribution system that can meet the combat commanders demands, CSS units must have the equipment to move the supplies.<sup>22</sup>

## CHAPTER V

### INFORMATION MANAGEMENT

Accurate, timely logistical information is vital to the Logistician in maintaining visibility of and controlling the flow of materiel through the distribution system. Without it, the manager's ability to prioritize and redirect cargo ceases and the system becomes backlogged, inefficient and non-responsive. Colonel William McDaniel in his award winning article "Combat Support Doctrine: Coming Down to Earth" in The Air Force Journal of Logistics expressed the following:

The distribution of people, materiel, and information between and within theaters demands extraordinary coordination between the services, unified commands, transportation operating agencies, and host nation. ...Moreover, the opportunity for things to go wrong abounds; resources can and will be lost, destroyed, damaged, spoiled, and misrouted. Therefore, information is crucial to controlling the distribution process.<sup>23</sup>

During ODS, theater Logisticians without current data and asset visibility were unable to respond to high priority customer requirements and created confusion and mistrust in the system. This resulted in increased requisitioning, priority abuse, hoarding, scrounging and excessive local purchases by the customer needing supplies.

Documentation procedures as outlined MILSTAMP Manual DOD 4500.32 R, Volume I, must be followed during any contingency just as they are in peacetime. The distribution system was not coordinated or disciplined and allowed shippers to provide minimal MILSTAMP data to get an item

moved quickly. This got the materiel moved quickly, but sorting it out at the other end resulted in tremendous port congestion and a system of manual management that was time consuming, manpower and equipment intensive and basically slow.<sup>24</sup>

#### DEPARTMENT OF DEFENSE ACTIVITY ADDRESS CODE (DODAAC)

The DODAAC is a six position alpha-numeric code assigned to identify a specific activity that is authorized to receive or ship materiel in the distribution system. DODAAC address changes that should have been initiated by units prior to their deployment were not done and upon arrival, no theater wide system existed to capture and publish listings of the units that had arrived in theater.

Containers and air cargo were shipped into the country consigned to a specific unit listing their DODAAC, but no theater wide list existed as to which units were in-country and where to send the containers and this resulted in their being held in the port.

If the DODAAC system is to be used to designate a ship-to address, the TADC could be the single agency charged with capturing a units code and adding it to the theater list. This list would also include the supporting SSA for the DODAAC if possible. If the DODAAC and the Unit Identification Code (UIC) were on the flight manifest when the unit arrived in country, the TAMCA movement control team working the aerial port would capture both and input them in the TADC theater data base.

Based on ODS, it would appear that for army units, the UIC would be more useful as an identification tool than the DODAAC. It was a unit unique code that almost everyone in the unit knew. Units would spray paint their UIC on the sides of containers they shipped and when they came into port their containers were easy to identify. It was easy and it worked better than the DODAAC system.

#### OCEAN CARGO MANIFESTS

Military ocean cargo manifests (DD FORM 1385) were usually the only information and visibility the theater had on inbound sustainment cargo or unit equipment. MTMC made herculean efforts to get hard copy manifests delivered to the theater and at one time four methods were being used to forward manifests, Federal Express, MAC Aircraft, Parcel Post and Courier. Efforts were also ongoing to bring the Department of the Army Standard Port System-Enhanced (DASPS-E) automated system on line using the Defense Data Network (DDN) and a telephone modem system called "EASY LINK".

The data entries on the Ocean Cargo Manifest which are included in MILSTAMP must be modified to provide information that is useful to the transporter and the customer. Proposed modifications listed below would enhance the customers capability to manage containers in the theater.<sup>25</sup>

1. Container Identification Number: MILSTAMP requires that the container number block be completed with the last five digits of the container number which is in contrast to 11 character number that commercial carriers use on their



documentation. This block should contain a four digit alpha character to reflect the carrier who owns or has leased the container, SEAU (Sealand) or APLU (Amer Pres Lines). This designator would enable you to determine which carrier to contact with regard to a container that does not have the company logo.<sup>26</sup>

2. Commodity Code/Trailer Line Information: MILSTAMP documentation has water shipment commodity codes that are used to identify items being shipped. These codes are included on transportation documentation for billing, cost accounting, contractor payment and customs clearance. However these codes are often not specific enough for the TAMMC Item Manager to make disposition for onward movement.

The commodity code on most manifests was 500, which is general cargo, not otherwise specified (GENOS), which really means "stuff". When coupled with generic trailer information such as, B-ration, 500Z9, Desert Shield, this manifest told the Materiel Manager that he had a container full of B rations, but it did not tell him which menu or meal. Thus the container had to be opened to provide item managers the level of detail needed to support unit requisitions and feeding cycles.

Subsistence shipments during ODS were often identified with commodity code 500. The undisciplined use of this generic commodity code dictates that units and shippers receive intensive MILSTAMP training and that peace and contingency operating procedures be the same.<sup>27</sup>

A user friendly automated system must be developed to ensure that transportation relevant data can be easily documented and forwarded to the customer.

3. Transportation Control Number (TCN): Business is done at the working level using container numbers: The commercial carrier, the Army mid-level manager, the yard manager, the trucker and almost anyone looking for his container. When containers are stacked in port, they are stacked end to end (security) and usually two and sometimes three high (space utilization) even if the TCN were attached somewhere, it was much faster to identify by container numbers which are painted on all sides of the container.

The TCN consists of a 17 character alpha-numeric and is the key data element used to track an item through the Defense Transportation System and to provide transportation movement data to LCA. The complete commercial container number is not used in creating the TCN only the last five numbers are taken from the 11 characters in the number.

The commercial container number should be used as the TCN, this would eliminate confusion between the military manifest and the commercial shipping documents. The container number plus six Xs could be used to complete the number. For unit moves, the UIC could be used to pair units and their containers.<sup>28</sup>

## ASSET VISIBILITY SYSTEMS

A number of systems exist to provide the transportation and materiel managers visibility of supplies in the system.

DA Pamphlet 700-30, Logistic Control Activity (LCA)

Information and Procedures states that LCA is the Army's central source for supply and transportation information.

"During contingency operations, LCA's mission is to ensure a smooth flow of Army-sponsored, non-unit cargo through air and surface ports and, also, to provide visibility of the logistics pipeline to the theater of operations." To accomplish this, LCA provides a Shipment Detail Lift Card (BDD) to the TAMMC.

### SHIPMENT DETAIL LIFT CARD (BDD) KEY DATA

- \* INTERMEDIATE TCN QUANTITY
  - \* REQUISITION NUMBER
  - \* CONSOLIDATED TCN
  - \* DATE LIFTED FROM CONUS
  - \* DESTINATION OVERSEAS
  - \* CARRIER CODE
  - \* VOYAGE NUMBER OR FLIGHT NUMBER
- 
- # Unique document produced by LCA
  - # Transceived overseas within 24 hours after POE lift for surface shipments
  - # Transceived overseas within 24 hours after CCP ship for air shipments

The BDD card provided managerial information that item managers at the TAMMC and the TAMCA needed to gain asset visibility and control the flow of supplies in the system. Class I item managers at the TAMMC did not know about the card and relied upon the ocean cargo manifest for data that LCA should have been routinely sending to the TAMMC.<sup>29</sup>

The distribution system must be disciplined, shippers

must provide the Requisition to Shipment Unit Cross Reference (BBO card) data and MAC and MTMC lift data into LCA's Logistics Intelligence File (LIF) so that the BDD card can be prepared and forwarded to the TAMMC. Asset visibility problems were compounded by theater agencies as they did a bad job of returning the TK6/TK9 cards back to LCA once they had regained visibility of the cargo and dispositioned it to a customer.<sup>30</sup>

The logistics community has developed a large number of information systems that are essentially "little islands" of information and do not exchange data between them. USTRANSCOM is developing the GTN and the Defense Logistics Agency (DLA) is developing its Enhanced DLA Distribution System (EDDS) with both having the goal of providing asset visibility and transportation asset control. LCA to accomplish its mission of providing intransit visibility has to rely on input data from USTRANSCOM and DLA.<sup>31</sup>

The feasibility of using LCA to create a Joint Distribution Control Agency that would truly result in one agency being the DOD focal point to provide intransit visibility of materiel moving through the distribution system should be seriously considered. Presently, USTRANSCOM (GTN), DLA (EDDS) and LCA (LIF) all claim to be able to or are working on systems to provide the customer managerial data that is accurate, timely, accessible, useable, relevant and affordable?

## INFORMATION MANAGEMENT SYSTEMS

Many of the shortfalls identified with intransit visibility in the distribution system can be directly traced to problems in the existing automated information systems which caused the system to lose visibility of the supplies long before they arrived in theater. There is an urgent need for the military to have an automated information management system capable of providing current and accurate intransit visibility data to the customer during both peacetime and contingencies.

The system must be equipped with automated equipment that makes it capable of tracking the status of ordered materiel as well as its location as it moves through the distribution system. The system must be unlike the systems presently in place that require constant human intervention to manage, track identify and record materiel and transportation equipment as it moves through the system.

The most promising candidates are a family of Microcircuit Technology in Logistics Applications (MITLA) devices that can acquire, process, maintain and store data on a microchip and reader/writer devices that can read and place data on a chip. The MITLA devices have the potential to improve accuracy, timelines, handling, processing, retrieval and transfer of data in CSS operations.

Two tests of the MITLA devices have been done at Fort Hood and Red River Army Depot and the system has demonstrated a high degree user acceptance and system reliability.<sup>32</sup>

USTRANSCOM to support its mission of global mobility management and to provide in-transit visibility to supported CINCs is developing the Global Transportation Network (GTN). GTN ties together existing military and civilian transportation data bases to provide a near-real time information system. The goal of GTN is to connect those transportation information systems that contain the information needed regardless of the transportation mode to accomplish the commands's mission of providing intransit visibility.

USTRANSCOM has assumed both the peacetime and contingency functions of its components. Its missions of providing intransit visibility, the traffic management functions, control of strategic mobility and GTN development make it the ideal agency to centrally manage the development of an MITLA based information management system to provide the visibility of containers and cargo moving within the Distribution system.<sup>33</sup>

In developing new information management systems, complex systems have low customer acceptance because of reliability problems and unrealistic training requirements. As one Israeli observed: "U.S. weapons are designed by engineers for engineers whereas Soviet weapons are designed for the combat soldier." The doctrinal principal of simplicity is as relevant to information management systems as it is to combat operations.<sup>34</sup>

## CHAPTER VI

### IN-THEATER CONTAINER DISTRIBUTION

General Nathan Bedford Forrest would have indeed been proud of us during Desert Storm for being able "to get there fastest with the mostest", even if cargo visibility did suffer a bit. The supply visibility problems of ODS were not without precedent, as every major deployment, whether the Spanish-American War, World War I, World War II, Korea or Vietnam has had supply problems because the managers of the distribution system could not control the flow of supplies in the system and as a result were not able to answer basic intransit visibility questions.

The Tampa Bay of 1898 that James Huston describes in his *Sinews of War* sounds very much like Dammam 102 years later.

The two railroads serving the Tampa area soon were clogged with freight cars. Facilities and wagons were lacking for rapid unloading, and many cars arrived without invoices or bills of lading, so their contents could be determined only by personal inspection. Within a few weeks a thousand cars were backed up on sidings as far away as Columbia, South Carolina, and only five government wagons and twelve hired civilian wagons were on hand for unloading. When additional wagons did begin to arrive, they came knocked down and had to be assembled. Quartermaster officers blamed the railroad companies, and the fiercely competing railroad companies (the Plant Line and the Florida Central) blamed each other and the quartermasters. The real problem was unloading. If warehousing could be found, and if the cars could be unloaded rapidly and the supplies stored in an orderly manner, then it really would not have mattered much that they had arrived ahead of their bills of lading....The concentration of troops and supplies at Tampa was far from being a smooth operation. It was chaotic and inefficient, and would have injured the sensibilities of any orderly administrator. But this is not to say it was ineffective, for the needed troops and supplies were there, and that was most important.<sup>35</sup>

During ODS, commercial container seallift flowed into a funnel: from multiple ocean terminals in CONUS, Europe and Asia cargo flowed to only one seaport, Dammam, Saudi Arabia. Early on the decision was made to use Dammam almost exclusively as the theater container port. This was a good decision as the port is a world class facility and probably the most capable port on the gulf. Use of the ports container handling equipment, gantry cranes, straddler-carriers, numerous berths and wide open hard surfaced staging areas, ensured vessels were rapidly discharged and containers staged for movement to the customer.

A distribution system shortfall occurred at Dammam Port because information management systems could not provide consignees and contents of discharged containers and theater and corps supply support activities did not have the CSE or force structure to receive containers or to create supply records.<sup>36</sup> It was clearly evident that the in-theater distribution system worked during ODS by the record number of containers discharged and the amount of supplies delivered to units throughout the entire area. However, as can be expected, a container dominated distribution operation the size of which supported ODS has identified some systemic problems that require long term solutions.

#### DIRECT PORT-TO-PORT VESSEL ROUTING

The two major commercial carriers American President Lines (APL) and Sealand Services (SLD) did not have direct service from CONUS ports into Dammam. Both carriers



transshipped from mother vessels to smaller feeder vessels at Algeciras, Spain (SLD) or Al Fujirah, UAE (APL) which was the way they routed their commercial business into the gulf.

The result was that after the tranship operation, the Ocean Cargo Manifest (DD FORM 1385) for the mother vessel which Dammam Port usually had, no longer tracked with the containers on the feeder vessel. The feeder vessels also had no military ocean cargo manifest and a mix of containers from more than one mother vessel. This caused containers to appear in Dammam with no manifest, consignee and contents unknown and they became frustrated cargo in the port.

The lack of feeder vessel manifests coupled with inadequate MILSTAMP documentation on received mother vessel manifests and no automated way to cross walk information between the onhand manifest and the carriers shipping documents resulted in about 25,000 of the 37,000 containers received being stopped and opened in the port. Containers were delivered to a holding area and a combined container opening team from the 321st TAMMC, XVIII Corps MMC and VII Corps MMC would open containers to determine contents and consignee. This information was then given to the item managers of the three MMCs and the 24th Trans Bn, the port container operator who would log the consignee and content data into their LASAR container tracking program.

Lack of direct port-to-port vessel routing also caused many problems with containers carrying unit equipment from Europe and resulted in high customer dissatisfaction.

The lack of information resulted in the port operator not being able to tell a commander what ship his units containers were on nor when his containers would be arriving.

Commanders were most unhappy about their units being fragmented between ships and no one being able to tell them when all the pieces might come together again only increased their frustration with the system.

Direct vessel routing must be used in the future as its use would have eliminated much of the problem with frustrated sustainment and unit equipment containers as the mother vessel, containers and manifest would have matched as they all started out together and ended up together.<sup>37</sup>

#### THEATER CONTAINER CONTROL PLAN

There was concern in the logistics community supporting the theater that problems the theater experienced with a container oriented distribution system were because the theater had no container control plan.

A theater container control plan had been developed by the SUPCOM ACoFS-Transportation and the 7th Trans Gp prior to the arrival of any containers in country. The plan would have had the 24th Trans Bn accomplish the port documentation mission and maintain the theater's main container data base. The Movement Control Teams arriving in country were to be equipped with LOGMARS and sent to each of the delivery sites to scan containers as they arrived or departed and then modem this information back to the main data base at Dammam where the container would be tracked and detention managed.

This system had the potential to work as it was the same as the one successfully tested during TEAM SPIRIT 90, when containers were tracked from the CONUS Port of Oakland to the ultimate consignee in Korea. The almost total lack of communications made it impossible to transmit data around Saudi Arabia and most teams arriving in country not being trained on the LOGMARS system resulted in the automated control system never getting off the ground. What was used was a manual system that provided container numbers via telephone or used a return copy of the Transportation Control Movement Document. The 24th Trans Bn's LASAR system could track containers out of the port and know where they were going to, but received almost no input from the field as to when the containers arrived or were returned back to the carrier. This system was the only automated military system developed to document, track and determine detention on containers in the theater.<sup>38</sup>

A TADC management cell must deploy into the theater early to control the distribution system and to direct and redirect the movement of containers between the theaters support activities.

#### INCOUNTRY TRANSPORT CAPABILITY

The Standard Mid-East Shipping Agreement (SMESA) which was negotiated between Military Sealift Command (MSC) and the commercial carriers required the carrier to provide the truck transport to move the container from the SPOD to the ultimate consignee. The huge volume of containers delivered quickly

used the host nation truck delivery capability that the carriers had under contract. The carriers had no way to expand their vehicle fleets as U.S. Forces had contracted for almost all of the available civilian tractor trailers in Saudi Arabia.<sup>29</sup>

The 318th TAMCA, when it arrived in country, tried to overcome the carriers shortfall by using a combination of rail and contract trucks, military trucking assets, military leased assets and even U.S. Army watercraft. It was partially successful, the problem was how to balance host nation transport capability between host nation military support and support to commercial operations.

With the arrival of the Raleigh Bay on 18 September 1990, the intermodal system delivered over 37,000 containers in support of ODS. Sealift was able to deliver containers and the Port of Dammam was able to accept them faster than the incountry distribution system could move and unload them.

During the period of Desert Storm, 15 January to 15 March 1991, 7,687 containers were moved forward from the SPOD, more than during any previous period. 318th TAMCA coordinated container movements peaked at 128 per day during Desert Storm.

There were significant challenges in moving containers within theater. The unforecasted demand for truck transport was far greater than the SMESA carriers could provide. The long delivery distances and poor quality of the access roads into the SSAs hindered delivery. Outstanding teamwork and

coordination between the commercial carriers and the military resulted in thousands of containers being moved through the system and to the customers' wherever they were located.<sup>40</sup>

#### MATERIEL HANDLING EQUIPMENT (MHE)

The introduction of containers early in the deployment highlighted the MHE shortfalls that existed throughout the distribution system. The early introduction of CSS units was critical if sustainment containers were to be moved and controlled through the system. The volume of containers coming into theater overwhelmed the CSS units at the warehouses and staging areas as the units were not equipped to receive, store and issue the quantities of supplies they were receiving.<sup>41</sup>

LTG Pagonis, the 22nd SUPCOM Commander, set a goal for the theater to keep container detention at 10 percent or under and an attempt was made to do this. Due to the lack of capability at the SSA's, the port operators were unstuffing containers in the port and the cargo, primarily MRE's staged and moved on flat bed trailers which most units could receive and offload. The port unstuffed over 1,200 MRE containers and returned the empties to the carrier.

Container movement to the forward SSAs was hindered and often prohibited due to inadequate CHE/MHE in the operating units at the forward sites. The 50,000 pound capacity Rough Terrain Container Handler (RTCH) is a key piece of CHE required by CSS units to download and position containers in the forward areas. Few units below EAC level are authorized

this piece of CHE and the few that are, were could not meet all units operational requirements. Requirements for RTCHs in many cases were met by hand receipting them from the 7th Trans Gp as their units were operating on the hardstand in the ports and could use host nation commercial design CHE.

CSS units operating forward need more 4,000 pound rough terrain forklifts and the 6,000 pound variable reach forklift to unstuff containers and to provide general support. The 10,000 pound rough terrain forklift is also needed to provide heavy lift capability and for Air Force 463L pallets.<sup>42</sup>

#### DISTRIBUTION SYSTEM MANAGEMENT

The 318th TAMCA and the 321st TAMMC were never able to achieve the unity of effort required to provide an effective responsive distribution system capable of integrating management of supply and transportation, developing effective information interfaces, providing intransit visibility, prioritizing the movement of critical items or performing any near term planning.

Both agencies were hindered by late arrival in the theater and had to catch up and integrate into the supply and transportation activities already underway. Some in the organizations felt they were not able to operate as effectively as required by being placed under the SUPCOM versus the doctrinal alignment with the TA headquarters.<sup>43</sup>

The first Echelon Above Corps (EAC) army unit formed was the ARCENT SUPCOM. Its rapid development was critical to the successful reception, onward movement and sustainment of

forces. Being positioned under the SUPCOM at Dhahran and Dammam put the TAMCA AND TAMMC at the vortex of logistical activity. Centralized management of logistics was happening at Dhahran and not at ARCENT Headquarters in Riyadh. The communication problems that existed theater wide would have effectively eliminated the TAMCA and the TAMMC from any role in distribution management had they been located in Riyadh.<sup>44</sup>

The amount of inadequately documented containerized subsistence flowing into the theater resulted in a distribution bottleneck at the port. The TAMMC Class I Item Managers displayed almost no expertise in managing the item and also displayed very little inclination to adapt to make the systems work with the data available. They refused to disposition any containers and insisted that all containers be opened for content verification even though DLA began to provide the theater consist lists of the items in the containers. TAMMC managers did not trust this source.

The TAMMC is not the normal day to day peacetime manager of wholesale Class I and this resulted in an ineffective contingency operation. DLA who is the normal manager of the Class I system must be in the theater early with the TADC.<sup>45</sup>

A distribution system of the size required in the ODS theater of operations required centralized management and control of all of the functions of the system: inventory, requisitioning, procurement, receipt and issue, storage, transportation, information management and planning. In addition, the theater required a single agency to integrate

and coordinate all aspects of the distribution system with DLA, USTRANSCOM, other services, coalition nations, host nations, the corps and other agencies.<sup>46</sup>

Throughout the entire operation, the primary impediment to effective container movement was the lack of timely disposition from the TAMMC. When the TAMCA arrived in country in October, the number of SSAs being shipped to was about 15, active containers were approximately 1,500 and container detention was six percent. The disposition and DOCAAC problems of the TAMMC were never effectively fixed and by 16 January 1991, SSAs being shipped to had risen to about 25, there were 5,581 active containers in country and the detention rate had hit 52 percent.<sup>47</sup>

Tailoring doctrine to meet the needs of the theater, LTG Pagonis created the position of a Physical Distribution Manager in the SUPCOM in February 1991 with the ultimate goals of fostering communication between the materiel and transportation managers and trying to sort out the mountain of containers building at the port. The Distribution Manager was successful in coordinating actions between the TAMCA and the TAMMC to fix specific distribution problems. Based on guidance from the SUPCOM Commander, the Distribution Manager directed on an exception basis, the TAMCA and TAMMC managers to prioritize certain actions to gain unity of effort and to increase effectiveness in the distribution system.<sup>48</sup>



## CHAPTER VII

### CONCLUSIONS AND RECOMMENDATIONS

Operations Desert Shield and Desert Storm were unprecedented and extraordinary logistical efforts for the U.S. Armed Forces. The total amount of weapons systems, logistical sustainment and personnel funnelled into the theater surpassed almost everyone's expectations. Logisticians quickly adapted to changing situations and, using initiative, ingenuity, hard work and good common sense, made the transportation and supply systems work to deploy and sustain our forces in the gulf. From the early days of Desert Shield throughout the war, keeping supplies flowing through the distribution system into the theater and getting it to the right person at the right time became the primary task of every logistician.<sup>49</sup>

The national and international transportation systems dictate the deployment and sustainment methods that will be available to support military operations. ODS was the first large military operation to rely heavily on the intermodal container, with over 37,000 sustainment containers delivered to the Gulf. Trends in the shipping industry indicate that the container will play an even greater role in sustaining future deployments. Breakbulk cargo operations are almost gone at most ports and even if available, are not capable of moving the cargo volumes required in the necessary timelines.<sup>50</sup>

The MTMC Commander, MG Richard G. Larson, emphasized the importance of the container during the recent National Defense Transportation Association Annual Forum while serving as a member of the panel "Surface Transportation-Linchpin to Projection." During the panel discussions, he made the following statement:

Intermodalism is here to stay!...We need to improve on and increase the use of containers, particularly for deployment....Commanders want container loaded supplies to go with the unit equipment, not be shipped separately. The theater of operations must have the capability to discharge, move and unload the container. The Army has to convince its own that the containers are here to stay and are an asset. The key to acceptance of the container is intransit visibility-the ability to tell, at any time, what is in a box and where the box is located.<sup>51</sup>

Containerized transport of materiel and equipment is an integral part of the deployment process and the projected use of containers must be reflected in the deliberate planning process. The Port of Dammam was the narrow part of the distribution funnel where the isolated activities of logistical agencies failed to adequately meet the requirements of the whole distribution system. The malfunction of the managerial aspect of the system; information management, documentation and unity of effort by the TAMMC and the TAMCA demonstrated it is as important to know where the supplies are as to physically have them.

Functional logistics managers had problems confirming the location or status of shipments and often lacked the ability to make data requests. The resulting misinformation or the lack of accurate information led to the perception the

system was broken. The distribution system needs improvements in many area, but it did not fail during Operations Desert Shield and Desert Storm.

#### RECOMMENDATIONS

The coming drawdown of U.S. forces, the shift to fewer forward deployed forces and fiscal constraints highlights the need to be able to rapidly deploy and sustain our warfighting forces anywhere in the world. The intermodal container coupled with the ro/ro ship offers the strategic mobility and the logistical efficiencies to meet the time and cargo volume requirements to accomplish this.

A container-oriented distribution system requires that the military and civilian force structure be balanced and integrated and that the information systems interface. This would enable the shipper, the transporter and the receiver to effectively manage the large number of containers that will be used to sustain our forces worldwide.

The doctrinal, planning and information management fixes listed below are required to totally integrate the intermodal container into all operations and must be pursued in a timely, effective and efficient manner:

#### DOCTRINAL FIXES:

1. Establish a Theater Army Distribution Center at TAHC from the assets of the TAMCA and the TAMMC to centrally manage the interrelated transportation and materiel management functions of the distribution system. The materiel and transportation managers at the TAACOM, Corps and Divisions should also be

combined into distribution centers for those commands.

2. Modify existing doctrinal distribution flow to move containers as far forward in the theater as possible to take advantage of the handling and transportation efficiencies.
3. Update unit TOEs adding 20 foot containers to load unit equipment and supplies and thus meet commanders desires to maintain unit integrity by deploying them with the unit.
4. Materiel must be unitized and packaged so as to provide the customer a useable product based on reception capability.
5. Establish MTMC as the worldwide origin to destination manager based on its present day traffic management functions and its role as the single manager for intermodal containers.
6. Maximize direct port-to-port vessel routing to speed delivery, eliminate information management problems and maintain unit integrity during strategic deployment.
7. Assign USTRANSCOM as the lead agency to develop an information system capable of near-real time intransit visibility of materiel in the distribution system.
8. Examine feasibility of making LCA a DOD Joint Logistic Control Agency interfacing with DLA, USTRANSCOM, the services and commercial carriers.
9. MTMC must become the worldwide ocean terminal operator in any contingency as it is in peacetime to ensure ease of transition and maintain continuity of operations.
10. Develop a joint container-oriented distribution system doctrine to optimize the use of containers to both deploy and sustain U.S. forces worldwide.

## PLANNING AND FORCE STRUCTURING FIXES

1. Ensure AFPDA logistical planning data has container planning factors with a level of detail that enables CAA to accurately model CSS force structure and strategic mobility requirements.
2. Class of supply requirements projected for each theater should be specified in terms of percent containerized so that force structure and OPLANS can be adjusted. Tactical shelters, unit supplies and Medical containers should be tracked in the system as unit equipment.
3. Realistic joint service deployment exercises must be held that require TA units (TADC/TAMCA/TAMMC) not only to deploy, but to sustain deployed forces (actual or computer simulated) using a container-oriented distribution system.
4. Program early deployment of the logistics managers and CSS operating units required to manage and work the containers deploying and sustaining the combat forces.
5. Commercial carriers must be included in the peacetime planning process to enable them to be prepared to meet contingency intermodal deployment requirements.
6. OPLAN feasibility studies must be conducted to assess their viability with regard to containers meeting mobility requirements against latest arrival dates.
8. Structure TOE units with the capability to handle containers at all the distribution nodes in the system and purchase the CHE to give them that capability.

## INFORMATION MANAGEMENT

1. Develop an integrated near-real time information management system that incorporates commercial carrier, military and emerging technologies (MITLA) to provide intransit visibility of the total distribution system.
2. Develop a user friendly system of MILSTAMP documentation and procedures that incorporates commercial practices and automated data interfaces.
3. USTRANSCOM continue development of the Global Transportation Network (GTN) and test its capability during joint deployment exercises.
4. CSS units must possess necessary automation and communications to ensure connectivity in passing management information between the distribution nodes.
5. Integrate LOGMARS type scanners or MITLA technology into all CSS units to automate the materiel and transportation information management functions and obtain asset visibility.
6. Logistical Information management systems must be realistically stressed and assessed by implementing and using contingency procedures during major deployment exercises.

## CONCLUSION

Operations Desert Shield and Storm required the rapid movement of equipment, materiel and personnel to project U.S. combat power to the Gulf. When viewed in its entirety, the operations can only be seen as a huge logistical success.

By analyzing the container-oriented distribution system that evolved during the operations, Logisticians have the

opportunity to fine-tune the management of containers within the distribution system. Maintaining intransit visibility and asset accountability has always been a challenge for the Logistician. The doctrinal concepts and operational procedures that drive the managerial functions in a container-oriented origin to destination distribution system have evolved from within the logistical system.

One of the major lessons learned during ODS, was the theaters need for centralized management of the distribution system at each level of command within the theater. Combining the theaters' materiel and transportation management functions into distribution centers commanded by a Physical Distribution Manager, at each level of command would provide the connectivity and integration required to obtain and maintain visibility and accountability of materiel and unit equipment flowing through the distribution system.

The "off-the-shelf" transportation, information management and storage capabilities the intermodal container provides to the Logistician, has resulted in a distribution system with tremendous potential. A system capable of providing a large portion of the strategic mobility needed to rapidly and effectively deploy and sustain our forces anywhere in the world.

In order to exploit rather than react to the potential of containerization, a centrally managed distribution system must be implemented in a timely, efficient and effective manner to provide the integrated management and unity of

effort required to gain intransit visibility and materiel  
accountability in a container dominated distribution system.

"Deterrence is only credible if we possess a robust  
means of power projection and the mobility to deploy and  
sustain our forces."

GEN Colin Powell  
House Armd Svcs Cmte  
7 February 1991.





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